

CLAIMS

The invention claimed is:

1. A device comprising:
 - a network interface for coupling to a network; and
 - a processor coupled with the network interface, in which the processor is adapted to
 - receive voice signals;
 - group the voice signals into a plurality of serial data speech frames;
 - analyze the voice signals of at least some of the data speech frames to classify each in one of a plurality of different types of speech;
 - determine a comparative discardability for some of the data speech frames relative to others from the type of speech;
 - encapsulate the data speech frames into data packets, at least some of the data packets including a comparative discardability code indicating the determined comparative discardability of the encapsulated data speech frames; and
 - transmit the data packets through a packet switched network.
2. The device of claim 1, in which the comparative discardability code is in an extension of an RTP header.
3. The device of claim 1, in which the types of speech include at least two of silence, unvoiced, voiced and pulsed.
4. The device of claim 1, in which one of the types of speech is silence, and a data packet encapsulating a frame of silence is assigned a high comparative discardability.

5. The device of claim 1, in which
a data packet encapsulating a frame that transitions from one type of speech to
another is assigned a low comparative discardability.

6. The device of claim 1, in which the processor is further adapted to:
assigning a similar comparative discardability to a first preset number of serially
occurring data speech frames of a first one of the types of speech; and
assigning a next occurring data speech frame of the first type of speech a higher
comparative discardability.

7. The device of claim 6, in which the processor is further adapted to:
assigning a similar comparative discardability to a second preset number of
serially occurring data speech frames of a second one of the types of speech; and
assigning a next occurring data speech frame of the second type of speech a
higher comparative discardability,
in which the first preset number is different from the second preset number.

8. A device comprising:
a network interface for coupling to a network; and
a processor coupled with the network interface, in which the processor is adapted
to
receive voice data packets through a packet switched network;
store the received packets in a buffer;
retransmit some of the stored packets through the network;
extract a comparative discardability code of a specific one of the stored
packets relative to the others, wherein the comparative discardability code is
related to a preset type of encoded speech;
make a discard decision for the specific packet in accordance with the
extracted comparative discardability code and the preset type of speech; and
delete the specific packet without retransmitting it if the discard decision
is to drop the packet.

9. The device of claim 8, in which the processor is further adapted to:
sense a congestion in the network, and
in which the comparative discardability code is extracted responsive to sensing
the congestion.

10. The device of claim 8, in which the processor is further adapted to:
set a discarding probability in accordance with the analyzed comparative
discardability code, and
in which the discard decision is made in accordance with the set discarding
probability.

11. A device comprising:
means for receiving voice signals;
means for grouping the voice signals into a plurality of serial data speech frames;
means for analyzing the voice signals of at least some of the data speech frames to
classify each in one of a plurality of different types of speech;
means for determining a comparative discardability for some of the data speech
frames relative to others from the type of speech;
means for encapsulating the data speech frames into data packets, at least some of
the data packets including a comparative discardability code indicating the determined
comparative discardability of the encapsulated data speech frames; and
means for transmitting the data packets through a packet switched network.

12. The device of claim 11, in which
the comparative discardability code is in an extension of an RTP header.

13. The device of claim 11, in which
the types of speech include at least two of silence, unvoiced, voiced and panned.

14. The device of claim 11, in which

one of the types of speech is silence, and
a data packet encapsulating a frame of silence is assigned a high comparative
discardability.

- 5 15. The device of claim 11, in which
a data packet encapsulating a frame that transitions from one type of speech to
another is assigned a low comparative discardability.
- 10 16. The device of claim 11, further comprising:
means for assigning a similar comparative discardability to a first preset number
of serially occurring data speech frames of a first one of the types of speech; and
means for assigning a next occurring data speech frame of the first type of speech
a higher comparative discardability.
- 15 17. The device of claim 16, further comprising:
means for assigning a similar comparative discardability to a second preset
number of serially occurring data speech frames of a second one of the types of speech;
and
means for assigning a next occurring data speech frame of the second type of
20 speech a higher comparative discardability,
in which the first preset number is different from the second preset number.
- 25 18. A device comprising:
means for receiving voice data packets through a packet switched network;
means for storing the received packets in a buffer;
means for retransmitting some of the stored packets through the network;
means for extracting a comparative discardability code of a specific one of the
stored packets relative to the others, wherein the comparative discardability code is
related to a preset type of encoded speech;
30 means for making a discard decision for the specific packet in accordance with
the extracted comparative discardability code and the preset type of speech; and

means for deleting the specific packet without retransmitting it if the discard decision is to drop the packet.

19. The device of claim 18, further comprising:
5 means for sensing a congestion in the network, and
in which the comparative discardability code is extracted responsive to sensing the congestion.

20. The device of claim 18, further comprising:
10 means for setting a discarding probability in accordance with the analyzed comparative discardability code,
in which the discard decision is made in accordance with the set discarding probability.

21. An article comprising: a storage medium, the storage medium having instructions stored thereon, in which when the instructions are executed by at least one device, they result in:

receiving voice signals;

grouping the voice signals into a plurality of serial data speech frames;

20 analyzing the voice signals of at least some of the data speech frames to classify each in one of a plurality of different types of speech;

determining a comparative discardability for some of the data speech frames relative to others from the type of speech;

25 encapsulating the data speech frames into data packets, at least some of the data packets including a comparative discardability code indicating the determined comparative discardability of the encapsulated data speech frames; and
transmitting the data packets through a packet switched network.

22. The article of claim 21, in which
30 the comparative discardability code is in an extension of an RTP header.

23. The article of claim 21, in which
the types of speech include at least two of silence, unvoiced, voiced and polsed.

24. The article of claim 21, in which
one of the types of speech is silence, and
a data packet encapsulating a frame of silence is assigned a high comparative
discardability.

25. The article of claim 21, in which
a data packet encapsulating a frame that transitions from one type of speech to
another is assigned a low comparative discardability.

26. The article of claim 21, in which the instructions further result in:
assigning a similar comparative discardability to a first preset number of serially
occurring data speech frames of a first one of the types of speech; and
assigning a next occurring data speech frame of the first type of speech a higher
comparative discardability.

27. The article of claim 26, in which the instructions further result in:
assigning a similar comparative discardability to a second preset number of
serially occurring data speech frames of a second one of the types of speech; and
assigning a next occurring data speech frame of the second type of speech a
higher comparative discardability,
in which the first preset number is different from the second preset number.

28. An article comprising: a storage medium, the storage medium having instructions
stored thereon, in which when the instructions are executed by at least one device, they
result in:

receiving voice data packets through a packet switched network;
storing the received packets in a buffer;
retransmitting some of the stored packets through the network;

extracting a comparative discardability code of a specific one of the stored packets relative to the others, wherein the comparative discardability code is related to a preset type of encoded speech;

making a discard decision for the specific packet in accordance with the extracted comparative discardability code and the preset type of speech; and

deleting the specific packet without retransmitting it if the discard decision is to drop the packet.

29. The article of claim 28, in which the instructions further result in:

sensing a congestion in the network, and

in which the comparative discardability code is extracted responsive to sensing the congestion.

30. The article of claim 28, in which the instructions further result in:

setting a discarding probability in accordance with the analyzed comparative discardability code,

in which the discard decision is made in accordance with the set discarding probability.

31. A method comprising:

receiving voice signals;

grouping the voice signals into a plurality of serial data speech frames;

analyzing the voice signals of at least some of the data speech frames to classify each in one of a plurality of different types of speech,

determining a comparative discardability for some of the data speech frames relative to others from the type of speech;

encapsulating the data speech frames into data packets, at least some of the data packets including a comparative discardability code indicating the determined comparative discardability of the encapsulated data speech frames; and

transmitting the data packets through a packet switched network.

32. The method of claim 31, in which
the comparative discardability code is in an extension of an RTP header.
33. The method of claim 31, in which
the types of speech include at least two of silence, unvoiced, voiced and pulsed.
34. The method of claim 31, in which
one of the types of speech is silence, and
a data packet encapsulating a frame of silence is assigned a high comparative
discardability.
35. The method of claim 31, in which
a data packet encapsulating a frame that transitions from one type of speech to
another is assigned a low comparative discardability.
36. The method of claim 31, further comprising:
assigning a similar comparative discardability to a first preset number of serially
occurring data speech frames of a first one of the types of speech; and
assigning a next occurring data speech frame of the first type of speech a higher
comparative discardability.
37. The method of claim 36, further comprising:
assigning a similar comparative discardability to a second preset number of
serially occurring data speech frames of a second one of the types of speech; and
assigning a next occurring data speech frame of the second type of speech a
higher comparative discardability,
in which the first preset number is different from the second preset number.
38. A method comprising:
receiving voice data packets through a packet switched network;
storing the received packets in a buffer;

retransmitting some of the stored packets through the network;
extracting a comparative discardability code of a specific one of the stored
packets relative to the others, wherein the comparative discardability code is related to a
preset type of encoded speech;

5 making a discard decision for the specific packet in accordance with the extracted
comparative discardability code and the preset type of speech; and

deleting the specific packet without retransmitting it if the discard decision is to
drop the packet.

10 39. The method of claim 38, further comprising:
sensing a congestion in the network, and
in which the comparative discardability code is extracted responsive to sensing
the congestion.

15 40. The method of claim 38, further comprising:
setting a discarding probability in accordance with the analyzed comparative
discardability code,
in which the discard decision is made in accordance with the set discarding
probability.

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